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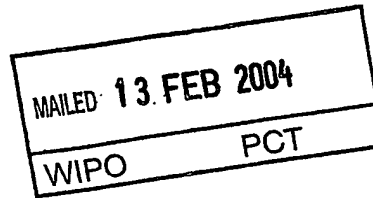


PCT/IR 03 / 05405  
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*Stephen Hordley*

Dated

18 November 2003

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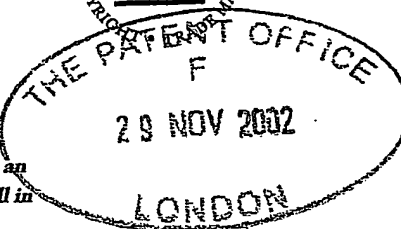
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1/77

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1. Your reference

6.70.1039 UK

02DEC02 E767560-8 000073  
P01/7700 0.00-0227932.1

2. Patent application number

(The Patent Office will fill in this part)

0227932.1

3. Full name, address and postcode of the or of each applicant (underline all surnames)

INTERBREW S.A.  
VARSTRAAT 94  
B-3000 LEUVEN  
BELGIUM

Patents ADP number (if you know it)

If the applicant is a corporate body, give the country/state of its incorporation

A BELGIAN CORPORATION

7906530002

4. Title of the invention

VALVE ASSEMBLY FOR ALCOHOL  
BEVERAGE DISPENSING APPARATUS

5. Name of your agent (if you have one)

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

G.F. REDFERN & CO.  
LYNN HOUSE  
IVY ARCH ROAD  
WORTHING  
WEST SUSSEX. BN14 8BX

Patents ADP number (if you know it)

1412002

82435356001

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country

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Date of filing  
(day / month / year)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing  
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8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

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Drawing(s)	<u>7 + 7 SW</u>

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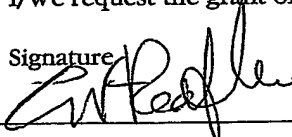
Request for preliminary examination and search (*Patents Form 9/77*)

Request for substantive examination (*Patents Form 10/77*)

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11. I/We request the grant of a patent on the basis of this application.

Signature



Date

29 November 2002

12. Name and daytime telephone number of person to contact in the United Kingdom

Mrs. S.M. Camp  
01903 820466

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- 1 -

## VALVE ASSEMBLY FOR ALCOHOL BEVERAGE DISPENSING APPARATUS

### Field of the Invention

The present invention relates to a valve assembly adapted for filling a bag with an alcohol beverage where the bag is contained in a container.

### Background of the Invention

It is known to contain alcohol, such as wine in bags contained in a cardboard type container. Further, it is known to use a bag inserted into a keg for storing beer in the bag. In the case of a beer keg, pressure is applied to the bag to dispense the beer from the bag and out of the keg. Further, the bag is inserted into the keg container prior to the beer being filled into the bag.

The filling of beer into the bag, has two potential problems. One problem is that the bag still may contain air that mixes with the beer and spoils the beer. Another problem is that the filling of the beer directly into the bag has been known to rupture the bag.

Summary of the Invention

It is an object of the present invention to provide a valve assembly for use with an alcohol beverage or beer dispensing apparatus that reduces the risk of the bag retaining air when filled with beer.

It is another object of the present invention to provide a single valve assembly that fits through a single opening for the container of an alcohol or beer dispensing apparatus.

It is another object of the present invention to provide a valve assembly for an alcohol beverage or beer dispensing apparatus that is adapted to fill the bag with alcohol, is adapted to supply a pressure in the container against the bag for dispensing the alcohol from the bag, and reduces the chances of the bag rupture during filling of the bag.

The present invention relates to a valve assembly adapted for use in filling a bag with an alcohol beverage where the bag is contained in a container having an aperture. The valve assembly has a valve body adapted to be secured in the aperture that has three spaced apart passageways extending through the valve body and in which are seated three valves. The first valve controls the flow of one of charging gas, preferably CO<sub>2</sub> and beverage, preferably beer, through the first passageway, into and out of the bag. The second valve controls the flow of one of the charging gas and the beverage through the second passageway, into and out of the bag. The third valve controls the flow of gas, preferably air, through the third passageway, into and out of the container exterior of the bag.

By providing an extra valve that permits for charging gas, the bag may be inflated with the charging gas prior to filling with beer. The use of the charging gas reduces the risk of bag rupture when the beverage is

filled into the bag.

It should be understood that by charging gas it is meant any inert gas that does not react with the alcohol beverage to spoil the beverage. When the alcohol beverage is filled into the inflated bag, the inert charging gas, and any air mixed therewith, is forced out the valve not used to fill the bag with the beverage.

Each valve has a valve actuator for opening and closing the valve. Preferably, the valve actuator of each valve extends away from the valve body by a different predetermined distance. This permits for selective activation of the valves either one at a time or in set combinations during inert gas filling, alcohol filling and alcohol dispense mode of operation.

Preferably, the first passageway is centrally disposed of the valve body and the other two passageways are spaced radial thereof.

In accordance with an aspect of the present invention there is provided a valve assembly adapted for filling a bag with an alcohol beverage where the bag is contained in a container having an aperture. The valve assembly comprises a valve body adapted to be secured in the aperture. The valve body has first, second and third spaced apart passageways extending through the valve body. The valve assembly has first, second and third valves. The first valve is seated in the first passageway for controlling the flow of one of charging gas and beverage through the first passageway, into and out of the bag. The second valve is seated in the second passageway for controlling the flow of one of charging gas and beverage through the second passageway, into and out of the bag. The third valve is seated in the third passageway for controlling the flow of gas through the third passageway, into and out of the container exterior of the bag.

Preferably, the alcohol beverage is beer.

#### Brief Description of The Drawings

For a better understanding of the nature and objects of the present invention reference may be had to the accompanying diagrammatic drawings in which:

Figure 1 is a front elevation view of a home beer dispensing apparatus in accordance with the present invention;

Figure 2 is a side elevation view of the home beer dispensing apparatus;

Figure 3 is broken away perspective view of the keg showing the valve and spear assembly mounted within the keg;

Figure 4 is a sectional side view of the valve and spear assembly as shown in Figure 3;

Figure 5 is a perspective view of the valve and spear assembly outside of the keg;

Figure 6 is a plan view of the valve body of the valve assembly; and,

Figures 7, 8, 9, 9a and 10 are simplified sectional views of the valve body showing valve operation.

#### Detailed Description Of The Invention

Referring to Figures 1 and 2 there is shown a home beer dispensing apparatus, appliance or unit 10. The dispensing apparatus 10 is primarily intended for use in domestic kitchens but may also be used in utility rooms, garages, domestic bars, caravans etc. While the preferred embodiment relates to dispensing beer, alternatively carbonated solutions or other alcohol beverages may be dispensed by apparatus 10.

The home beer dispensing apparatus 10 has a front wall 12 and a

dispensing tap 14 protruding forward of the front wall 12. A drip tray 16 also protrudes forward of the front wall 12 and is adapted to support an open glass container 18 below the dispensing tap 14. The home beer dispensing apparatus 10 further has a base 21 adapted to rest on a counter top. The front wall 12 is an extension of two pivoting side walls 20 which may be moved between closed and open positions to allow the keg 22 (see Figure 2 in broken lines) to be inserted into the housing of the home beer dispensing apparatus 10.

The housing of the home beer dispensing apparatus 10 further includes a top wall 24 and a rear wall 26. The rear wall 26 has a grill 30 that permits for air circulation within the home beer dispensing apparatus 10. An electrical cord 32 extends through the rear wall 26 of the apparatus 10 to provide a connection into a main electrical supply to supply electrical power to the electrical components housed within the unit 10. Alternatively, a 12 Volt DC supply input may be used.

The dispensing apparatus 10 has a cooling system 34 located behind and below keg 22 that is adapted to cool beer in keg 22 when keg 22 is placed into dispensing apparatus 10.

Referring now to Figures 3 through 6, the valve assembly 40 and spear 102 are shown.

The valve assembly 40 is adapted to fit into a raised collar aperture 42 of keg 22. The valve assembly 40 has an annular shaped body 46 that is secured in the aperture 42. The valve body 46 has an annular groove 47 and flange 49 that is adapted to extend above the keg 22 for mating with a tap dispensing adapter (not shown) connected to tap 14 (see Figures 1 and 2).

The valve body 46 has a first passageway 48, a second passageway



50, and a third passageway 52 spaced apart from each other and extending through the valve body 46. As best seen in Figure 6, the first passageway 48 is centrally disposed or located within the valve body 46 and the second and third passageways 50, and 52 are spaced radially of the first central passageway 48.

The valve assembly includes a first valve 54, a second valve 56 and a third valve 58. The first valve 54 is seated in the first passageway 48 for controlling the flow of the beverage or beer through the first passageway 48 into and out of the bag 44.

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The second valve 56 is seated in the second passageway 50 for controlling the flow of gas such as carbon dioxide through the second passageway 50 into and out of the bag.

The third valve 58 is seated in the third passageway 52 and controls the flow of gas through the third passageway 52 into and out of the keg 22 exterior to the bag 44.

Each valve, 54, 56, and 58 has a valve actuator or stem 60 that effectively opens and closes the valve. The valve stem 60 extends away from the valve body 46 by a different predetermined distance for each of valves 54, 56 and 58. Each of the valves 54, 56 and 58 further includes a valve head 70 connected to the valve stem 68. The valve head 70 carries an O-ring 72 which is adapted to seal the valve head within the respective passageway. A spring 74 urges the valve head 70 into sealing engagement with its corresponding passageway. The valve stems 68 are accessible from outside the keg 22 for moving each valve head 70 into an open and closed position to respectively enable and inhibit fluid flow through passageways 48, 50 and 52.

The valve body 46 has an annular recessed groove 62 recessed in

an inner wall 64 of the valve body 46. The inner wall 64 is positioned within the keg 22. The recessed grooves 62 is adapted for receiving the neck 66 of bag 44 in press fit relation therewith. The annular recessed groove 62 has a diameter that surrounds the first and second passageways 48 and 50. The third passageway 52 is located outside of the diameter of the recessed groove 62 and as a result, the third passageway 52 is located outside of the bag 44.

The keg 22 has a collar flange 82 which defines the raised collar aperture 42, the valve body 46 has an outer peripheral wall 63 with a recessed groove 61 extending around the outer wall 63. An intermediate ring or bung 80 is adapted to seat the valve body 46 within the raised collar aperture 42. The intermediate ring 80 has inner and outer walls 84, 86. The inner wall 84 has flange 88 extending inwardly thereof that is adapted to fit into the recessed groove 61 of the outer wall 63 of the valve body 46. The outer wall 86 of the intermediate ring 80 has a resilient barb 90 and a locking flange 92 spaced from the barb 90 so as to define a outer locating groove 94 into which the collar flange 82 of the keg 22 is held. The barb 90 is adapted to pass through the aperture 42 and spring back into locking engagement with the collar flange 82 so as to lock the valve assembly 40 in place. Special tools are required to remove the valve assembly 40 and the intermediate ring 80 from the collar flange 82 of the keg 22 once the keg 22 is returned to the brewery for refilling.

In order to ensure that the contents of the keg 22 have not been tampered with, the keg 22 has an anti-tamper ring 96 that overlays the intermediate ring 80, a portion of the keg 22 and a portion of the valve body 46. The intermediate ring 80 has an aperture 98 that passes completely through the intermediate ring 80 to provide a vent

passageway. The anti-tamper ring 96 has a flange part 100 that is inserted into the vent aperture 98 of the intermediate ring 80. In the event the anti-tamper ring 96 is removed from the keg 22, vent aperture 98 is open and the contents or any pressure within the keg 22 is released. Further, as a pressure relief feature, the anti-tamper ring 96 is designed to release from aperture 98 when pressure in keg 22 exceeds a predetermined value to vent pressurized air through aperture 98.

The valve assembly 40 and the spear assembly 102 provide a combination that may be removed for the purposes of recycling of the valve assembly 40 and the spear assembly 102. The bag neck 66 can be removed from the valve assembly 40 so that this valve 40 and spear 102 assembly may be cleaned and reused with a new bag 44 and bag neck 66. The valve and spear assembly is shown as an independent assembly in Figure 5. In order to accommodate the spear 102, the first passageway 48 of the valve body 46 has a tubular extension 104 that extends downwardly or outwardly from the inner wall 64 of the valve body 46. The spear 102 comprises an elongated hollow tube which may have rounded bottom edges or bottom end 108 that extends the spear and the first passageway 48 of the valve body 46 towards the bottom of the keg 22 and the bottom of the bag 44. The hollow spear 102 has an outside diameter that fits inside the diameter of the tubular extension 104 of the first passageway 48 in an interference type of fit whereby the two parts may be secured together. The interference fit may be a tapering effect between the outer wall of the spear 102 and the inner wall of the tubular extension 104. Alternatively, a snap fit may be utilized.

Referring to Figure 7, the valve assembly 40 is shown with each of its first, second and third valves 54, 56 and 58 in a closed position. The

valve stems 68 of each valve 54, 56 and 58 extends a different distance upwardly so that it may be activated in a selective manner described in relation to the method of filling the bag 66 with beer or alcohol beverage.

Referring to Figure 8, the valve assembly 40 is shown secured to the keg 22 with the bag 44 illustratively shown in a smaller circle within the keg 22. Initially, the bag is deflated when the valve assembly 40, spear 102 and bag 44 are inserted into the keg 22. Next, an engagement ring 110 engages the actuator 70 of the first valve 54 and at the same time an engagement ring 112 engages the actuator 70 of the third valve 58. At this stage, carbon dioxide is blown in through the first valve passageway 48 because the first valve 54 is opened by the engagement ring 110. The carbon dioxide inflates the bag 44 such that the bag is inflated to fill the volume of the keg 22. Further, the carbon dioxide mixes with air trapped in bag 10.

As the bag 44 expands within the container 22 air trapped between the bag 44 and the keg 22 exits through the third passageway 52 because the third valve 58 is open.

Referring to Figure 9, the next step is to insert or fill the bag 44 with beer. Preferably, the larger valve or central valve is used. That is the first valve 54 is opened and at the same time the second valve 56 is opened. In this embodiment, the beer will go in through the first passageway 48 and the carbon dioxide will exit through the second passageway 50 removing any air mixed with the carbon dioxide gas.

Referring to Figure 9A, an alternative arrangement is shown where the bag 44 is loaded with beer in an inverted position. In this position, the smaller valve or second valve 56 is used to insert the beer into the container and the first valve 54 is used to permit the carbon dioxide to

exit the bag 44.

The next step is the dispensing step which is shown in Figure 10. An adapter or keg adapter 114 is mounted onto the valve assembly 40 to open valves 54 and 58 such that a dispensing tube 118 is connected to the first passageway 48 whereby when dispense tap 14 opens, the beer flows up through hollow spear 102 and out the first passageway 48 to the tap 14. At the same time, in order to facilitate this flow of beer, the exterior wall of the bag 44 is pressurised. This is done by a pressure system (not shown) which is attached to the third passageway 52 and with the third valve 58 open to permit pressurized air to enter through the third passageway 52.

The different predetermined heights or extensions of the valve actuator 60 of each of the first, second and third valves 54, 56 and 58 permits for different valves to be actuated or opened by the dispenser ring in a selective manner.

## WHAT IS CLAIMED IS:

1. A valve assembly adapted for filling a bag with an alcohol beverage where the bag is contained in a container having an aperture, the valve assembly comprising:

a valve body adapted to be secured in the aperture, the valve body having first, second and third spaced apart passageways extending through the valve body;

a first valve seated in the first passageway for controlling the flow of one of charging gas and beverage through the first passageway into and out of the bag;

a second valve seated in the second passageway for controlling the flow of one of charging gas and beverage through the second passageway into and out of the bag; and,

a third valve seated in the third passageway for controlling the flow of gas through the third passageway into and out of the container exterior of the bag.

2. The valve assembly of claim 1 wherein each valve has a valve actuator for opening and closing the valve, and the valve actuator extending away from the valve body by a different predetermined distance.

3. The valve assembly of claim 1 wherein one of the first, second and third passageways is centrally disposed of the valve body and the other two passageways are spaced radial thereof.

4. The valve assembly of claim 3 wherein the first passageway is the one passageway that is centrally disposed of the valve body.

5. The valve assembly of claim 3 wherein each valve has a valve actuator for opening and closing the valve, and the valve actuator

extending away from the valve body by a different predetermined distance.

6. The valve assembly of claim 5 wherein the first passageway is the one passageway that is centrally disposed of the valve body.

7. The valve assembly of claim 6 wherein the valve body has an annular shape.

8. The valve assembly of claim 7 wherein the valve body has an annular ring adapted to extend above the container for mating with a dispensing adapter.

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9. ~~The valve assembly of claim 7 wherein the valve body has~~  
an annular recessed groove positionable within the container for receiving a neck of the bag in press fit relation therewith.

10. The valve assembly of claim 9 wherein the annular recessed groove has a diameter that surrounds the first and second passageways.

11. The valve assembly of claim 1 wherein the valve body has a recessed groove positioned within the container for receiving a neck of the bag in press fit relation therewith.

12. The valve assembly of claim 11 wherein the recessed groove surrounds the first and second passageways.

13. The valve assembly of claim 1 wherein the first, second and third valves each comprise stem valves having a valve piston and a valve head, each said valve stem is accessible from outside the container for moving the valve head into open and closed positions respectively enabling and inhibiting fluid flow through a respective passageway associated with the valve body.

14. The valve assembly of claim 13 wherein each valve head carries an o-ring for sealing against a surface of the respective

passageway in the valve body and a spring seated in the respective passageway for urging the valve head into a closed position.

15. The valve assembly of claim 13 wherein each valve stem extends a different predetermined distance from the valve body.

16. An alcohol beverage dispensing apparatus comprising:

a keg having an aperture;

a bag contained in the keg for containing an alcohol beverage; and,

a valve assembly comprising:

a valve body secured in the aperture of the keg, the valve body having first, second and third spaced apart passageways extending through the valve body;

a first valve seated in the first passageway for controlling the flow of one of charging gas and beverage through the first passageway into and out of the bag;

a second valve seated in the second passageway for controlling the flow of one of charging gas and beverage through the second passageway into and out of the bag; and,

a third valve seated in the third passageway for controlling the flow of a pressurizing gas through the third passageway into the container and exterior of the bag.

17. The dispensing apparatus of claim 16 wherein each valve has a valve actuator for opening and closing the valve that extends away from the valve body and out from the container by a different predetermined distance.

18. The dispensing apparatus of claim 16 wherein one of the first, second and third passageways is centrally disposed of the valve body and the other two passageways are spaced radial of thereof.



19. The dispensing apparatus of claim 18 wherein the first passageway is the one passageway that is centrally disposed of the valve body.

20. The dispensing apparatus of claim 18 wherein each valve has a valve actuator for opening and closing the valve that extends away from the valve body and container by a different predetermined distance.

21. The dispensing apparatus of claim 20 wherein the first passageway is the one passageway that is centrally disposed of the valve body.

22. The dispensing apparatus of claim 21 wherein the valve body has an annular shape.

23. The dispensing apparatus of claim 22 wherein the valve body has an annular ring adapted to extend above the container for mating with a dispensing adapter.

24. The dispensing apparatus of claim 22 wherein the valve body has an annular recessed groove positioned within the container for receiving a neck of the bag in press fit relation therewith.

25. The dispensing apparatus of claim 24 wherein the annular recessed groove has a diameter that surrounds the first and second passageways.

26. The dispensing apparatus of claim 16 wherein the valve body has a recessed groove positioned within the container for receiving a neck of the bag in press fit relation therewith.

27. The dispensing apparatus of claim 26 wherein the recessed groove surrounds the first and second passageways.

28. The dispensing apparatus of claim 16 wherein the first, second and third valves each comprise stem valves having a valve piston

and a valve head, each said valve stem is accessible from outside the container for moving the valve head into open and closed positions respectively enabling and inhibiting fluid flow through a respective passageway in the valve body.

29. The dispensing apparatus of claim 28 wherein each valve head carries an o-ring for sealing against a surface of the respective passageway in the valve body and a spring seated in the respective passageway for urging the valve head into a closed position.

30. The dispensing apparatus of claim 29 wherein each valve stem extends a different predetermined distance from the valve body.

31. The dispensing apparatus of claim 16 wherein the charging gas is carbon dioxide and the pressurized gas is air.

32. The dispensing apparatus of claim 16 wherein the container has a collar flange defining the container aperture, the valve body has an outer wall with a recessed groove extending around the outer wall, and the valve assembly further comprising an intermediate ring having an inner and outer walls, the inner wall of the intermediate ring having a flange extending inwardly thereof adapted to fit into the recessed groove of the outer wall of the valve body, and the outer wall of the intermediate ring having a resilient barb and spaced locking flange defining an outer groove into which the collar flange of the container is held, and the barb passing through the aperture and springing back into locking engagement with the collar flange to lock the valve assembly in place.

33. The dispensing apparatus of claim 33 wherein the container has an anti-tamper ring overlaying and the intermediate ring.

34. The dispensing apparatus of claim 34 wherein the intermediate ring has a aperture into which a flange part of the anti-

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tamper ring is inserted so that if the anti-tamper ring is removed, the aperture vents the inside of the container outside of bag.

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VALVE ASSEMBLY FOR ALCOHOL BEVERAGE  
DISPENSING APPARATUS

ABSTRACT

A valve assembly is disclosed for filling a bag with beer where the bag is contained in a beer keg having an aperture. The valve assembly has a valve body adapted to be secured in the keg aperture that has three spaced apart passageways extending through the valve body and in which are seated three valves. The first valve controls the flow of one of CO<sub>2</sub> and beer through the first passageway into and out of the bag. The second valve controls the flow of one of CO<sub>2</sub> and beer through the second passageway into and out of the bag. The third valve controls the flow of air through the third passageway into and out of the container exterior of the bag. By providing an extra valve that permits for CO<sub>2</sub> the bag may inflate with the CO<sub>2</sub> prior to filling with beer. The use of the CO<sub>2</sub> reduces the risk of bag rupture during filling with beer. When the beer is filled into the inflated bag, the CO<sub>2</sub> is forced out the bag removing any air mixed therewith.

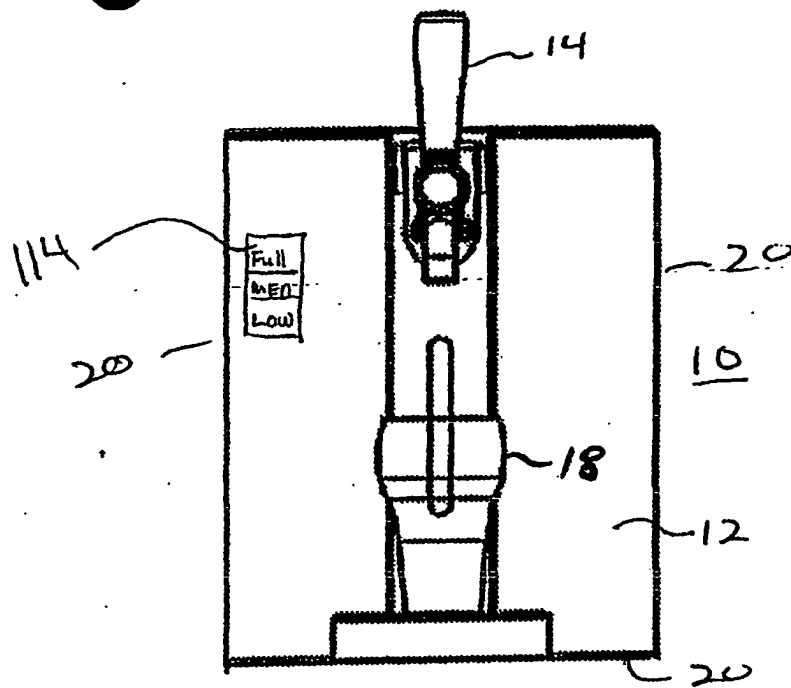


FIG. 1

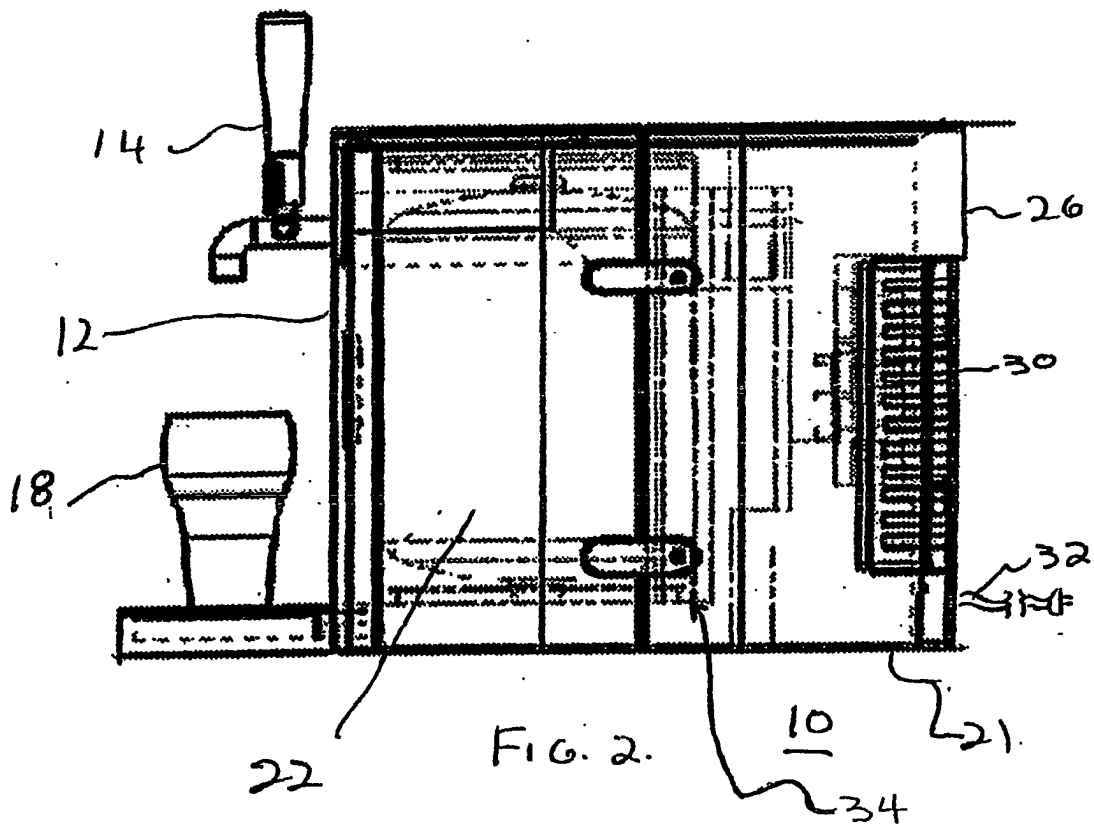


FIG. 2.

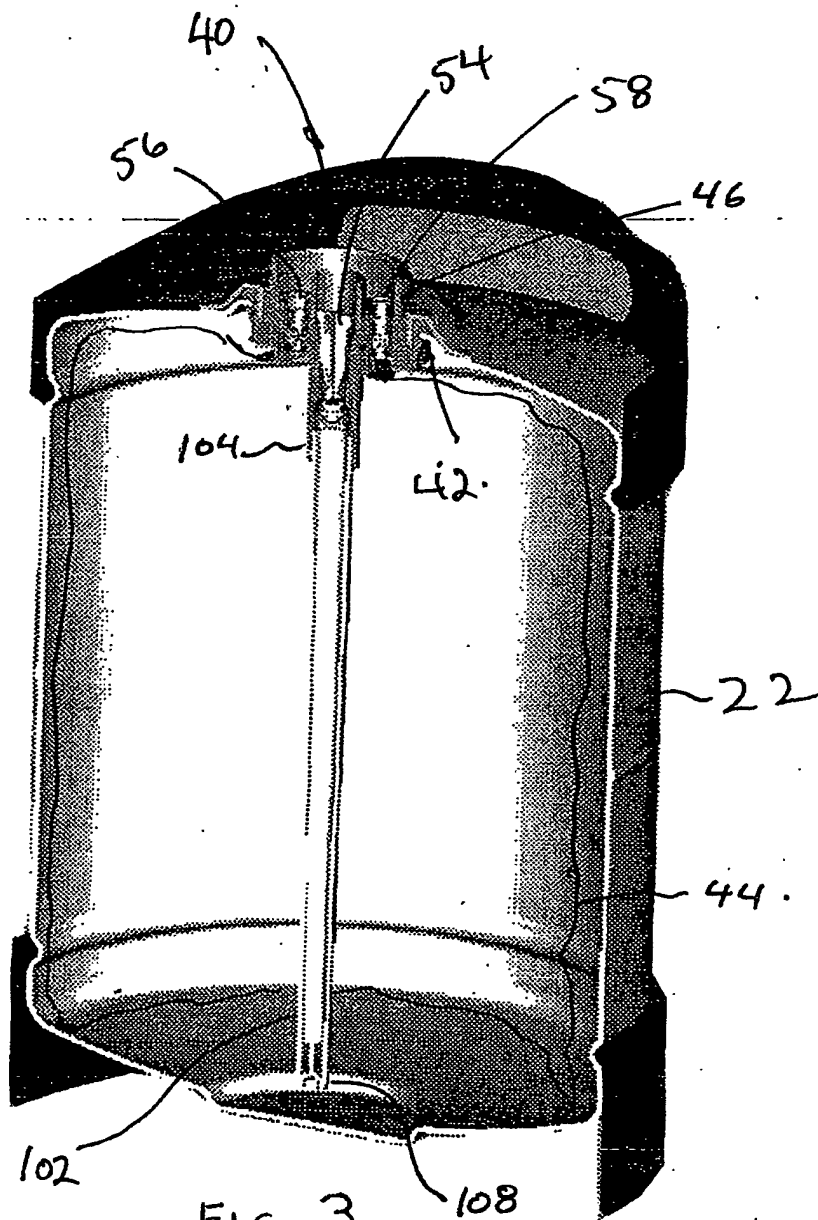


FIG 3



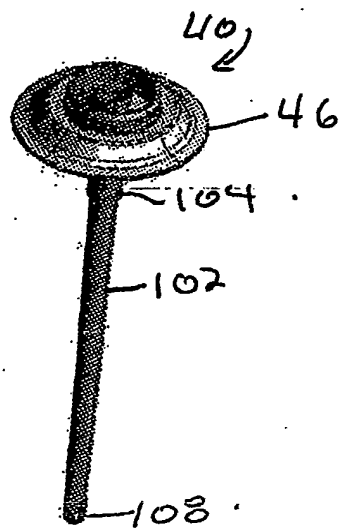


FIG. 5

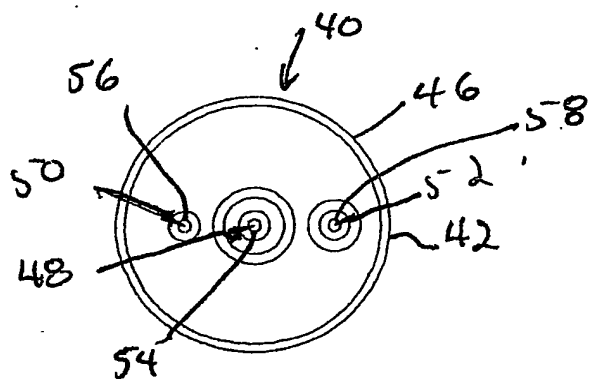


FIG. 6.



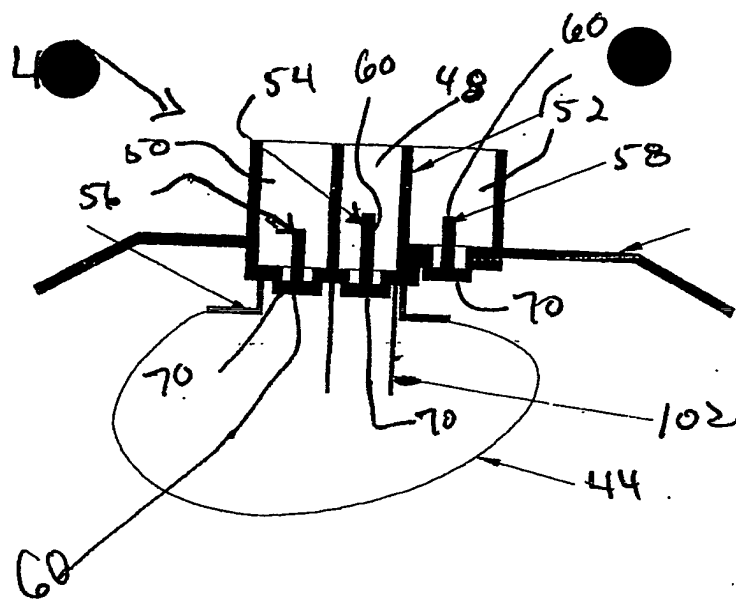


FIG. 7

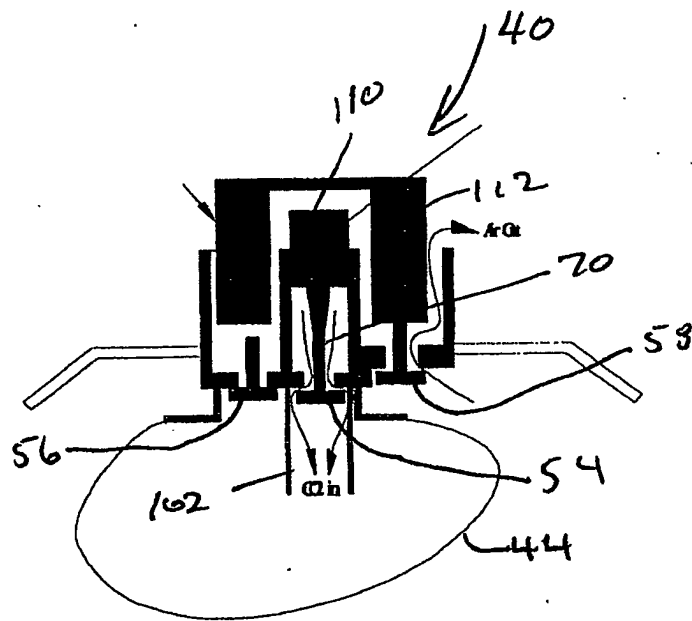


FIG. 8

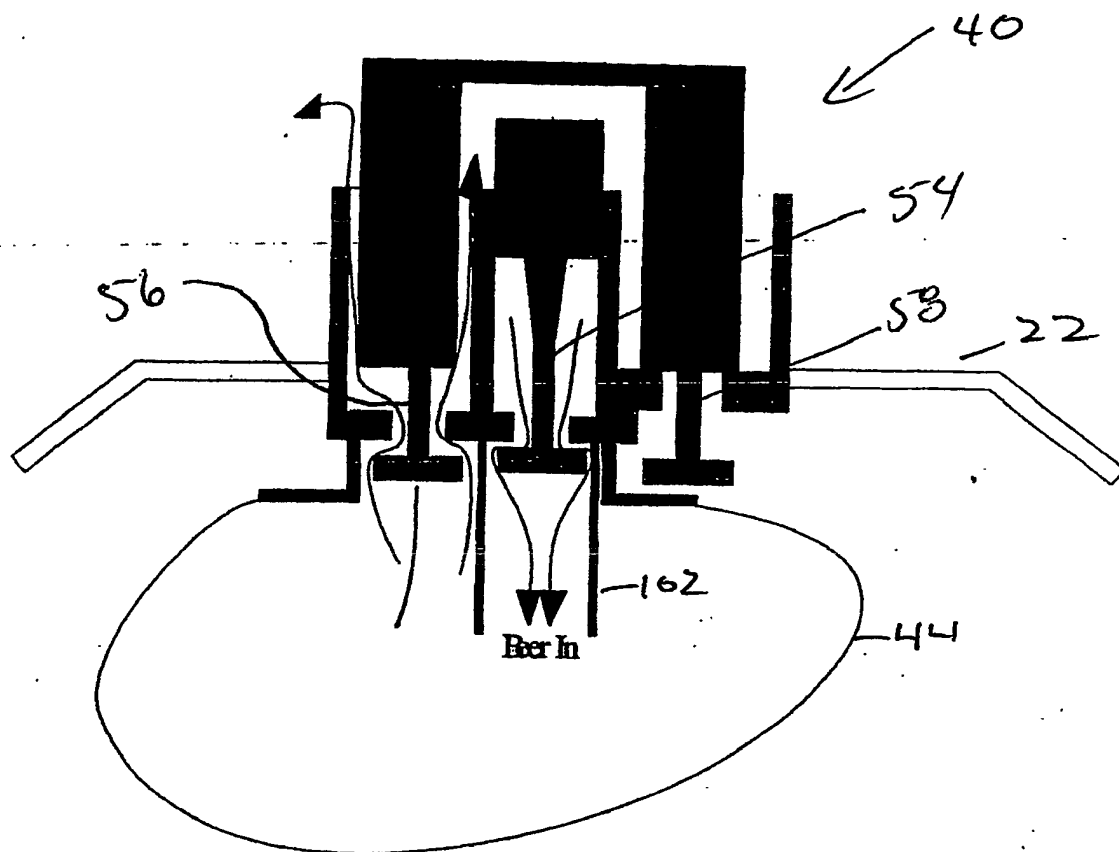


FIG. 9

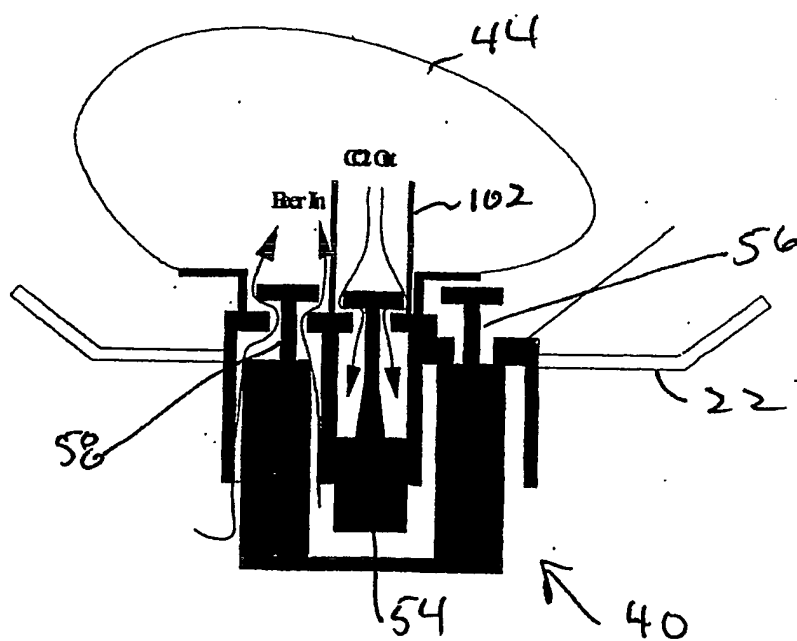


FIG. 9a

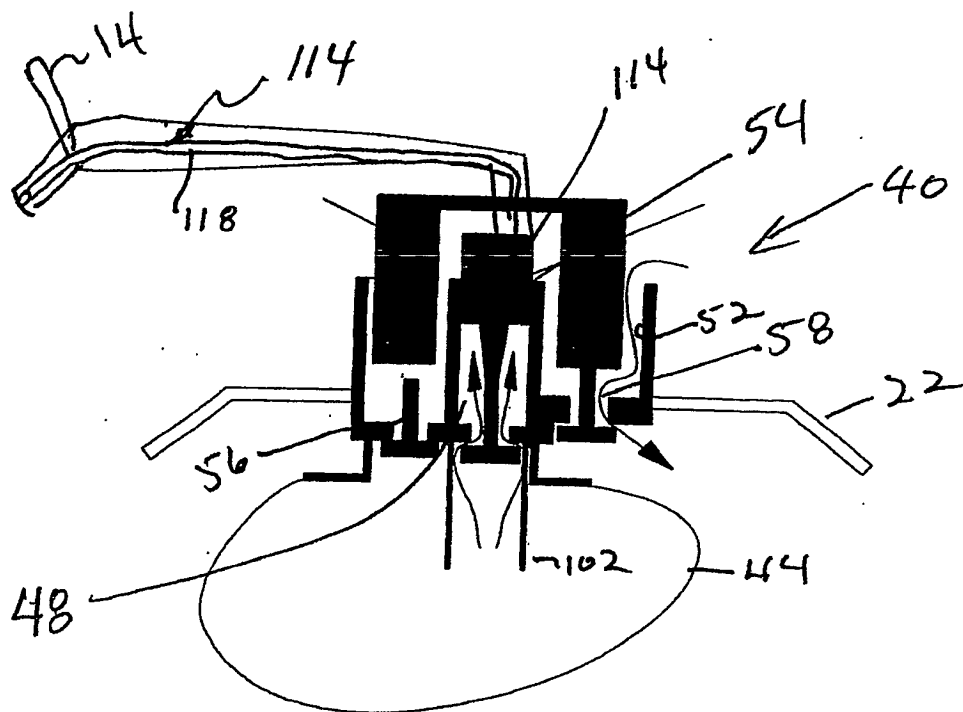


FIG. 10.

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